

**REMARKS**

Claims 1-13 are pending in the application. Claims 1-4, 6-10, and 12-13 stand rejected. Claims 3, 9, and 13 have been canceled without prejudice or a disclaimer. Claims 1, 7, 8, and 12 are independent claims.

Claim 1 has been amended and the term “injecting” has been replaced with the term “receiving.” Support for the amendment can be found in Figure 5 and at page 11, line 9-11, which discloses a light source containing at least one Fabry-Perot laser that receives spectrum-spliced incoherent light. Moreover, the feature related to the threshold current, the features reciting “the threshold current which changes... wavelength of the oscillation mode,” has been amended.

Applicant submits that above amendments were made **not for any reason related to patentability** of claim 1. Instead, such amendments were made because applicant believes that such amendment better reflect and clarify the applicant’s invention.

Claims 1, 8, and 12 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for reciting “injecting spectrum-spliced incoherent light.”

Applicant submits that the term “injecting spectrum-spliced incoherent light,” as recited in claims 8 and 12 and the original claim 1, simply refers to incoherent light that is spectrum-spliced and injected to the Fabry-Perot laser. Thus, applicant believes that the terms are clear and definite, and applicant respectfully requests withdrawal of the rejections.

Applicant wishes to thank the Examiner for indicating that claims 5 and 11 would be allowable if such claims are rewritten as independent claims incorporating the features of the base and any intervening claims. Applicant, however, wishes to defer rewriting such claims as independent claims.

Claims 1, 8, 12 stand rejected under 35 U.S.C. ' 103(a) as allegedly obvious over Zhang (U.S. 6,055,252) in view of applicant's Admitted Prior Art ("APA"). Claim 7 stand rejected under 35 U.S.C. ' 103(a) as allegedly obvious over Zhang in view of the applicant's APA, further in view of Lee *et al.* (U.S. Pub. 2003/0206740) ("Lee") and King *et al.* (U.S. 5,812,572) ("King").

Claim 1 recites, *inter alia*, "**a bias controlling unit for limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser." Claim 7, an apparatus claim, and claims 8 and 12, method claims, recite similar features.

As noted in the specification, the threshold current of the Fabry-Perot ("FP") laser varies due to, among others, change in the temperature of the FP laser (page 9, line 13-19). Such variation renders the threshold current to be either relatively larger or smaller than the current supplied to FP laser and adversely affect the transmission characteristics of the laser (Id.). The present invention recited in claims 1, 7, 8, and 12, however, minimizes the adverse effect by, among other, including a bias controlling unit that limits the current supplied to the FP laser to the bias current having value adjacent to a threshold current of the FP laser (page 10, line 5-13).

In rejecting claims 1, 7, 8, and 12, the Office Action indicates that such bias controlling unit is disclosed in Zhang (present Office Action, page 2-3). As such, the Office Action indicates that the features of the FP laser and the bias controlling unit recited in claims 1, 7, 8, and 12 do not patentably distinguish the claims from either the combination of the Zhang and the APA or the combination of Zhang, APA, Lee, and King.

Zhang, as read by applicant, discloses a fiberoptic transmitter comprising a driving circuit that includes (1) a bias current generator and a (2) temperature dependent modulation current

generator. Moreover, Zhang discloses that **the FP laser is supplied with the modulation current in addition to the bias current.**

Therefore, **current supplied to FP laser is not limited to bias current** having value adjacent to a threshold current of the FP laser. (column 4, line 38-50 (disclosing that  $I_{\text{mod}}$  is provided to the laser in addition to  $I_{\text{bias}}$  such that the device maintains the constant extinction ratio; see also Figure 2)), and Zhang fails to disclose “**a bias controlling unit for limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser,” as recited in claims 1, 7, 8, and 12.

The APA, described in the present application, discloses a device that minimizes the deterioration of transmission characteristics by controlling the temperature of the FP laser with a thermistor and a TEC disposed on both sides of the FP laser. The APA, however, does not disclose “**a bias controlling unit for limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser,” as recited in claims 1, 7, 8, and 12. Therefore, the devices disclosed in the APA are different from and do not teach the bias controlling unit recited in the claims.

Lee, as read by applicant, discloses a wavelength-tunable light source including a FP laser diode, a driving circuit providing current to the FP laser, and a temperature controller connected to the laser diode (7-9). However, nowhere in Lee is there a disclosure that such driving circuit limits the current supplied to the FP laser to the bias current as does the bias controlling circuit of claims 1, 7, 8, and 12.

Moreover, the WDM light sources disclosed in Lee contain a plurality of temperature controllers and Thermo-Electric Cooler (“TEC”) (Figures 7-11), or alternatively, an external

modulator (0087, see Figure 5) that are described in the Background of the present application (see Figure 3 and page 3, line 14-19, respectively). Therefore, applicant believes that Lee, as does the APA, minimizes the deterioration of the transmission characteristics by controlling the temperature of the FP laser or applying the external modulator, not by “**limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser,” as does the bias controlling unit of claims 1, 7, 8, and 12.

King, as read by applicant, discloses an intelligent fiberoptic transmitter containing a laser diode that **receives modulation current in addition to the bias** current near the threshold current of the laser diode (column 6, line 62-column 7, line 2; Figure 2). Therefore, King, as does Zhang, also fails to disclose “**a bias controlling unit for limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser,” as recited in claims 1, 7, 8, and 12.

As Zhang, the applicant’s APA, Lee, and King fail to disclose “**a bias controlling unit for limiting a current supplied to the Fabry-Perot laser to a bias current**, wherein the bias current has a value adjacent to a threshold current of the Fabry-Perot laser,” as recited in claims 1, 7, 8, and 12, the references, alone or in combination, fail to render claims 1, 7, 8, and 12 obvious. Applicant respectfully requests withdrawal of the rejection on such claims.


Other dependent claims in this application are each dependent on the independent claims 1, 7, 8, and 12, and the dependent claims, therefore, are believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

Amendment  
Serial No. 10/730,568

Should the Examiner deem that there are any issues which may be best resolved by telephone, please contact Applicant's undersigned representative at the number listed below.

Respectfully submitted,

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*2/28/06*

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